

**AIR UNIVERSITY**  
**CURTIS E. LEMAY CENTER FOR DOCTRINE**  
**DEVELOPMENT AND EDUCATION**



**Taking the Lead**  
***Russia, the United States, and***  
***Nuclear Nonproliferation after Bush***

STEPHEN J. CIMBALA

Research Paper 2008-2

Air Force Research Institute  
Maxwell Air Force Base, Alabama 36112-6026

December 2008

Report Documentation Page				Form Approved OMB No. 0704-0188	
Public reporting burden for the collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to a penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.					
1. REPORT DATE <b>DEC 2008</b>		2. REPORT TYPE		3. DATES COVERED <b>00-00-2008 to 00-00-2008</b>	
4. TITLE AND SUBTITLE <b>Taking the Lead: Russia, the United States, and Nuclear Nonproliferation after Bush</b>				5a. CONTRACT NUMBER	
				5b. GRANT NUMBER	
				5c. PROGRAM ELEMENT NUMBER	
6. AUTHOR(S)				5d. PROJECT NUMBER	
				5e. TASK NUMBER	
				5f. WORK UNIT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) <b>Air Force Research Institute (AFRI),155 N. Twining St., Bldg 693,Maxwell AFB,AL,36112-6026</b>				8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)				10. SPONSOR/MONITOR'S ACRONYM(S)	
				11. SPONSOR/MONITOR'S REPORT NUMBER(S)	
12. DISTRIBUTION/AVAILABILITY STATEMENT <b>Approved for public release; distribution unlimited</b>					
13. SUPPLEMENTARY NOTES					
14. ABSTRACT					
15. SUBJECT TERMS					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT <b>Same as Report (SAR)</b>	18. NUMBER OF PAGES <b>39</b>	19a. NAME OF RESPONSIBLE PERSON
a. REPORT <b>unclassified</b>	b. ABSTRACT <b>unclassified</b>	c. THIS PAGE <b>unclassified</b>			

### Disclaimer

Opinions, conclusions, and recommendations expressed or implied within are solely those of the author and do not necessarily represent the views of the Curtis E. LeMay Center for Doctrine Development and Education, Air University, the United States Air Force, the Department of Defense, or any other US Government agency. Cleared for public release: distribution unlimited.

Air Force Research Institute (AFRI) papers and Air University monographs are occasional studies written by Air Force researchers at large and military defense analysts assigned to the Curtis E. LeMay Center for Doctrine Development and Education at Air University and beyond. The purpose of the AFRI papers is to provide useful ideas and independent analysis of issues of current or potential importance to Air Force commanders and their staffs. This monograph and others in the series are also available electronically at the Air University Research Web site <https://research.maxwell.af.mil/> and the *Air and Space Power Journal* Web site <http://www.airpower.au.af.mil>.

## Contents

	<i>Page</i>
DISCLAIMER . . . . .	ii
FOREWORD . . . . .	v
ABOUT THE AUTHOR . . . . .	vii
ACKNOWLEDGMENTS . . . . .	ix
TAKING THE LEAD: RUSSIA, THE UNITED STATES, AND NUCLEAR NONPROLIFERATION AFTER BUSH . . . .	1
Arms Control—A Large Menu . . . . .	1
Context Is All—And History Still Matters . . . . .	4
Approach and Method . . . . .	8
Conclusion . . . . .	23
NOTES . . . . .	23

## Illustrations

*Figure*

1 Total strategic weapons, United States–Russia, 1,000 limit . . . . .	9
2 Arriving retaliatory weapons, United States–Russia, 1,000 limit . . . . .	10
3 Generation stability, United States–Russia, 1,000 limit . . . . .	13
4 Launch-on-warning stability, United States–Russia, 1,000 limit . . . . .	14
5 Total strategic weapons, controlled proliferation model . . . . .	18
6 Arriving retaliatory weapons, controlled proliferation model . . . . .	19
7 Generation stability, controlled proliferation model . . . . .	21
8 Launch-on-warning stability, controlled proliferation model . . . . .	21



## Foreword

Dr. Stephen Cimbala is the author of numerous books and articles on national security issues, including several on deterrence—a subject of great concern to the current leadership of the Air Force. In 1998 Praeger published his *The Past and Future of Nuclear Deterrence*, and the same year, Texas A&M University published *Coercive Military Strategy*.

The acerbic atmosphere in Russian and American political relations that confounded various attempts at nonproliferation discussion, and even existing agreements on employment of nuclear forces, caught the attention of Dr. Cimbala, distinguished professor of political science at Pennsylvania State University. Dr. Cimbala's credibility in terms of military knowledge is evident from his years of lecturing, attending military exercises, and conducting research visits to military commands and schools. He has consulted on arms control to the US Arms Control and Disarmament Agency and the US Department of State. He sees the new administration as an opportunity to bring forward agreements on nuclear proliferation. The Bush administration, citing the difficulties with deterring or targeting terrorism, raised the need for preemptive strike, thereby derogating the antiballistic missile treaties and elevating the potential for employment of nuclear weapons in military strategy, in the view of Cimbala.

Cimbala seeks to reestablish relations on nuclear weapons control between the United States and Russia. He briefly describes arms control history to illustrate the complexities of building agreements as well as to find a relationship that leads to the satisfaction of both sides. He makes the point that more than just good relations between Russia and the United States is at stake. He suggests that when both Russia and the United States reach agreement about nuclear weapons, the case for controlled nonproliferation among the other nuclear powers can proceed, and that is to the good of everyone.



JOHN A. SHAUD

General, USAF, Retired, PhD

Director, Air Force Research Institute



## About the Author

Stephen J. Cimbala is Distinguished Professor of Political Science, Pennsylvania State University (Brandywine Campus). His teaching and research interests include international politics and foreign policy, defense and security studies, arms control, peace operations, conflict termination, and information warfare.

Dr. Cimbala is the author of numerous books and articles in professional journals on topics related to national security. His books include *The Past and Future of Nuclear Deterrence* (Praeger Publishers, 1998) and *Coercive Military Strategy* (Texas A&M University Press, 1998). He is co-author of the textbook *US National Security: Policymakers, Processes and Politics* with Sam C. Sarkesian and John Allen Williams.

Dr. Cimbala is an award-winning teacher, having received the Pennsylvania State University's Eisenhower Award for Distinguished Teaching in 1995. He was selected for inclusion in *2000 Outstanding Scholars of the 20th Century* by the International Biographical Centre, Cambridge, England, and is a member of Omicron Delta Kappa Leadership Honor Society.

Dr. Cimbala serves on the editorial board of five professional journals, and his recent lectures to military audiences include the US Army War College, Carlisle Barracks, Pennsylvania, and Headquarters, US Special Operations Command, Tampa, Florida.

He has participated in numerous exercises, studies or other research visits involving military commands and schools, including: NATO military headquarters, Mons, Belgium; US Army war games (OPFOR) at Ft. Irwin, California; US Naval War College Global War Game, Newport, Rhode Island; and a US Air Force chief of staff panel on the Future of Aerospace Power at the Air War College, Maxwell AFB, Alabama.

Dr. Cimbala has served as a consultant on arms control to the US Arms Control and Disarmament Agency (1997–99), to the US Department of State (1999), and to private defense contractors. He is a faculty associate of Penn State University's Institute for the Study of Nonlethal Defense Technologies.

He lives in Drexel Hill, Pennsylvania, with his wife Elizabeth Harder Cimbala, sons David and Christopher, numerous stuffed animals, and several aging vehicles.





## **Acknowledgments**

Grateful acknowledgment is made to Dr. James Scouras for use of his AWSM@ model for making calculations and graphs used in this study. Dr. Scouras is not responsible for its use here, nor for any arguments or opinions.



## **Taking the Lead**

### **Russia, the United States, and Nuclear Nonproliferation after Bush**

Nuclear arms control between Russia and the United States is a necessary condition, although insufficient for accomplishment of US and allied objectives in nuclear nonproliferation. New leadership in Russia in 2008 and in Washington in 2009 opens the door to progress, but where to begin and how far to go?

This discussion proceeds in three sections. First is a summary of pertinent policy background, emphasizing recent issues of contention between the United States and Russia; second, the significance of history, especially as seen from the Russian perspective; and third, an analytical model is used to examine a candidate Russian-American post-Strategic Offensive Reductions Treaty (SORT), or a new Strategic Arms Reductions Treaty (START), arms-control regime. This post-SORT regime is then employed as a building block for *development of a controlled non-proliferation regime involving eight powers*.

### **Arms Control—A Large Menu**

The United States and Russia concluded “two plus two” meetings between their respective foreign affairs and defense ministers in March 2008. The agenda for these discussions included a number of arms control questions that called for prompt attention. The START, agreed between the former Soviet Union and the United States during the Cold War, was set to expire in 2009 unless extended or replaced by a substitute. The verification regime for START was also required to validate compliance with the SORT, signed in Moscow in 2002 and set to go into effect at the end of December 2012. Overhanging the fates of START and SORT was the nagging question of US national missile defenses (NMD) that drove then-president Vladimir Putin and his Russian military advisors “ballistic” in 2007.<sup>1</sup>

In addition to START, SORT, and NMD, the acerbic atmosphere of Russian-American relations in 2007 also complicated prior agreements on conventional forces in Europe (CFE) and interme-

mediate nuclear forces (INF), both holdovers from the Cold War. Putin suspended temporarily (but indefinitely) Russian cooperation on CFE on the grounds that the revised version had not been ratified by NATO. Russian political and military leaders also questioned whether the INF Treaty was still viable in a world of increasing ballistic missile weapons spread. Under the INF Treaty, Russia foregoes the deployment of an entire class of land- and sea-based intermediate- and medium-range missiles (those with maximum ranges from 500 to 5,500 kilometers) despite Russia's military doctrine that calls for the prompt use of nuclear weapons in situations other than response to a prior nuclear attack.

The preceding agenda of nuclear-related questions was further bollixed by the problem of nuclear proliferation and the prior commitments of the United States and Russia under the Nuclear Nonproliferation Treaty (NPT). The inability of Russia and the United States to conclude a stable regime of long-range nuclear arms limitation could only serve as an incentive to recently outed, nascent, or aspiring nuclear states such as North Korea and Iran. The failure of the United States and Russia to build upon START and SORT would also bypass the opportunity to engage the existing and acknowledged nuclear powers in multilateral nuclear arms control or even disarmament. A frozen Russian-American nuclear arms control process could also encourage additional nuclear weapons spread in Asia, which already includes the nuclear weapons states of China, India, Pakistan, and (pending its compliance with the six-power agreement of 2007) North Korea.<sup>2</sup>

Adding to the complexity of the Russian-American arms control picture were uncertainties related to change of government in Washington and Moscow in 2008. In March 2008 Dmitri Medvedev was elected to succeed Vladimir Putin as president of Russia. Putin was named prime minister in May. Medvedev was expected to continue Putin's policies by many observers, although his own views on arms control issues were not obviously transparent. The US presidential election in November 2008 would replace the administration of Pres. George W. Bush, whose two terms in office left an impact on arms control issues that would carry forward, at least temporarily, into the future.

The Bush administration rejected the approach of its Cold War and post-Cold War predecessors to the negotiation of Russian-

American arms agreements. The detailed specification of compliance provisions and verification measures was replaced by the preference for short wording and generic limitations on weapons and launchers. Bush also abrogated US adherence to the Antiballistic Missile (ABM) Treaty and began construction of a global missile defense system supported by a research and development program for limited ballistic missile defense against rogue-state attacks or accidental launches. Finally, Bush's national security policy and nuclear posture statements moved in the direction of front-ending nuclear weapons onto usable military options compared to prior administrations.

US nuclear policy under Bush emphasized a "new triad" of nuclear and advanced-technology conventional forces, missile defenses, and improvements in national defense infrastructure as the new configuration of support for security strategy. Emphasizing the difficulty of deterring or targeting terrorists, the Bush administration placed the option of preemption at center stage in its discussions of US declaratory policy. The capability and will to carry out preemptive attacks would assist in deterring those attacks. Skeptics of the Bush emphasis on preemption warned that it could easily be conflated with preventive war, an idea with far more controversy among military professionals and political establishments.

In most prior military and arms-control thinking, preemption had been narrowly defined as carrying out a "first strike in the last resort." Preemption was judged necessary when (1) an adversary had made an irrevocable decision in favor of attack, (2) the attack was imminent or actually in progress, and (3) the defender had actionable and persuasive intelligence about the decision for attack and its timing. Preventive war, in contrast to preemption, was undertaken by one state in the expectation that another state could attack the first state at a future and more inopportune time. A preventive attack is therefore not predicated on intelligence about an imminent attack but on the expectation of a probable future attack, albeit with uncertain timing.<sup>3</sup> Great powers, challenged by rising medium powers, have sometimes favored preventive war strategies to maintain their places in the international hierarchy. International lawyers have tended to look less favorably on justifications for preventive as opposed to preemptive attacks, although the line

between the two can be shady because both are species of the genus “anticipatory attack.”

These complexities in policy and strategy related to nuclear arms control leave the issue of retooling START and SORT as intimately related to progress, or lack thereof, on nuclear non-proliferation, backing as well into the issue of nuclear first use and first strike with respect to long-range or other nuclear forces deployed by the United States and NATO, by Russia, or by other nuclear powers. Since politics drives strategy, the status of political relations between the United States and Russia thus drives forward, or in reverse, the loosely coupled but compartmented arenas of vertical and horizontal nuclear arms control (reducing the sizes of arsenals versus limiting the spread of weapons to new states). Therefore the stakes in “SORT-ing out START” and in moving toward a more favorable rapprochement on NMD, especially with respect to US plans for missile defenses deployed in Eastern Europe, are multilateral and go well beyond Europe. How to capture some of this complexity and the choices that follow from it are addressed in the next section.

### **Context Is All—And History Still Matters**

Discussions about nuclear arms control and nonproliferation often take place within a sterile environment. Historical and political context are subject to nullification in favor of the natural tendency of bureaucracies to count things. Policy makers and media commentators are driven by the issues du jour and the polls of yesterday. Historians and political scientists must, to the contrary, emphasize the various contexts within which nuclear arms control will or will not succeed. These contexts include the historical context; the political context; the geographical or geostrategic context; the sociocultural context, especially strategic culture and ethno-national demographics pertinent to defense policy; the economic context, including the resources available to states for the support of defense overall and for maintaining a nuclear weapons complex; the technological context, including currently available and foreseeable innovations that may apply to military power; and, certainly not least, a military-strategic context that includes international power balances and domestic civil-military relations.<sup>4</sup>

The United States and Russia bring to the negotiating table different historical experiences and memories, strategic cultures, patterns of civil-military relations, economic structures, and emphases in military-related technology innovation. They are not simply two missile farms. For example, the Soviet military experience in World War II was very different from the American one. Consider the losses suffered by the two states. According to military historian David M. Glantz, Russian and other reliable estimates of the numbers of Soviet deaths in the Second World War range from about 11 to 14 million military and from about 25 to 35 million civilians.<sup>5</sup> Four years of fighting on the eastern front wreaked societal destruction on a scale, and over a geographical expanse, unprecedented in the age of mechanized warfare, if not in modern history. And this happened to a people already savaged by Stalin's repressions of the 1930s, including the destruction of Soviet agriculture and the disemboweling of the Red Army military leadership by purges on the very eve of the outbreak of World War II.

From this perspective, it is quite understandable why Stalin and his successors sought to lock down the eastern front and to consolidate Soviet control over Eastern Europe during the Cold War years. One does not have to justify the evils and absurdities of Soviet communism to see the Cold War Soviet and post-Cold War Russian security dilemmas through their own geopolitical and historical lenses. The Soviet military forces deployed in Eastern Europe provided a glacis behind which the ravaged economy and society of the Second World War could be rebuilt. The American and NATO policies of containment, seen from the Soviet perspective, called for encirclement and constraint ("containment") of Soviet foreign policy and stopped just short of a direct military confrontation during the Cuban missile crisis of 1962. Of course, the Soviet leadership was responsible for its own blinkered ideological worldview that exaggerated and commingled all aspects of democratic capitalism as necessarily hostile to Soviet aims.

Justifiable or not, the Soviet Union emerged from the Second World War with an oxymoronic military mind-set—on the one hand, convinced of the inevitable victory of world socialism and of the invincibility of its armed forces and, on the other hand, paranoid and suspicious about any Western diplomatic or po-



litical initiatives that appeared to have the objective of weakening Soviet power. Nevertheless, the Soviet Union adjusted to the realities of a nuclear world with surprising dexterity. Whereas its party-political doctrine held (until Gorbachev) that victory was theoretically possible, even in a world war involving the use of nuclear weapons, Soviet military-operational and military-technical doctrine were more nuanced. Soviet diplomacy eventually acknowledged that, despite disagreements with the West over military doctrine and strategy in the nuclear age, the de facto existence of nuclear military-strategic parity between the Soviet Union and the United States was a potentially stabilizing force.<sup>6</sup> Even the autarchic Soviet economy could not spend an infinite amount of money on nuclear or other weapons. The Cuban missile crisis sobered up minds in the Kremlin about the potential costs of failed nuclear brinkmanship.

When Putin says that the demise of the Soviet Union was a historical tragedy, this statement sounds politically absurd to Westerners and obscene in human rights' terms to the victims of the Gulag. Putin himself has indicated that he regards Soviet ideology as passé in the modern age. What he is lamenting in the departure of the Soviet Union is not the loss of its oppressive character against its own citizens but the absence of Russia's military strength and political grandeur on the world stage. Leaders of Russia from Peter the Great to Putin see Russia as the successor to the Byzantine Empire and more; as a rightful power player in Europe, the Middle East, and Asia; and as the repository of a unique civilization that is both Western and Eastern. But its geographical expanse and sociodemographic diversity are both strengths and weaknesses, especially in an age that privileges asymmetrical warfare, including the possibilities of terrorist attacks with unconventional weapons.

Present-day Russia, attempting to rebuild its economy and armed forces from the halcyon days of the 1990s, observes NATO as enlarging closer to its state borders with a far superior conventional military capability. Along with this conventional military superiority, US intercontinental nuclear weapons and, now, prospective missile-defense deployments in Eastern Europe appear to challenge Russian deterrence credibility in Europe and globally. Facing east, Russia notices China's burgeoning economy and modernizing military and Japan's military

potential, should it decide to forego its self-imposed restrictions on defense. Russia has favorable political and military relations with China, including recently conducted joint military exercises, and nonhostile political relations with Japan. Intentions, however, have a way of changing faster than capabilities. To its south, Russia confronts political instability in the Caucasus and potentially in former Soviet territory in Central Asia. Few of the neighborhoods in which Russia lives offer low-cost security rentals or purchases.

Seeing Russia's security dilemmas from the "inside out" does not excuse or condone its mistakes and excesses in strategy and policy, but it is a necessary exercise to conduct serious business with Russia, including nuclear arms control and nonproliferation. The United States must deal with the Russia that is, and was; not with an artificial Russian construct created by American think tanks. And, as noted, US-Russian security cooperation is the foundation on which wider agreements depend.

This point is important because of the tendency during the Cold War and subsequently to emphasize the common danger created by nuclear weapons for one and all states. The point is not contested here. It is necessary to appreciate the shared nuclear danger. But the observation of shared nuclear danger among states is a necessary but not a sufficient condition for the appreciation of "the possible" in nuclear arms control. The conduct of arms control negotiations and the prevention of nuclear weapons spread is a hard business, because nuclear weapons have a devilish appeal to dissatisfied state actors—security, prestige, diplomatic swaggering, and "bigger bang for the buck" are among many motives for nonnuclear states to acquire nuclear weapons and for nuclear weapons states to hold onto them.

The United States and other nuclear powers may have been lulled into a false sense of security about nuclear weapons due to Cold War and post-Cold War experience in the avoidance of nuclear conflict and by the relatively slow pace of nuclear weapons spread since 1945, compared to the expectations of nuclear pessimists. This optimism in the present international system is misplaced and dangerous. The Cold War constraints on nuclear first use have been weakened, and the possibility of accidental or inadvertent nuclear war has increased with the spread of nuclear weapons to states with uncertain civil-military relations

and problematic political stability. In fact, a tipping point in US and allied efforts against nuclear weapons spread may be imminent. Failure to obtain by diplomatic means the dismantlement of North Korea's nuclear weapons capability and the inability to prevent Iran from joining the ranks of nuclear weapons states could upset the stability of the Middle East and North Asia by unleashing nuclear arms races in both regions.

## **Approach and Method**

Prior discussion has argued the relationship between Russo-American nuclear arms reductions and the probability of success in broader efforts toward nuclear nonproliferation. Beyond asserting the connection, it might be useful to show its possible effects. This will be accomplished in two steps, each making use of an analytical model for asking pertinent questions. First, the stability of a Russian-American nuclear arms control regime under post-Moscow Treaty constraints will be explored. Second, a comparable simulation for a stabilized world of controlled nuclear proliferation, compatible with the Russian-American regime developed in the first step, will be postulated and examined for pertinent results.

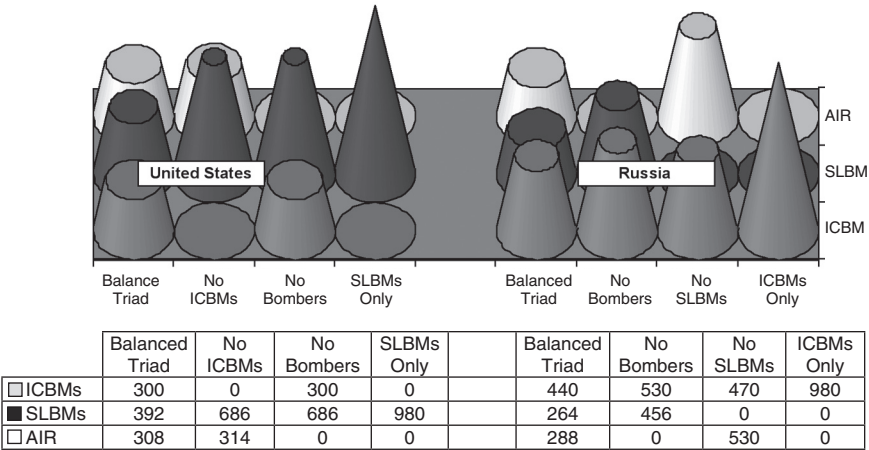
## **Beyond, and Below, SORT**

For the first step, the nuclear exchange model permits us to examine alternative possible force structures for the United States and for Russia, under the hypothetical post-SORT limitation of 1,000 operationally deployed nuclear warheads on intercontinental launchers for each state.<sup>7</sup> A post-SORT ceiling of 1,000 warheads allows for significant reductions below the SORT maximum and might encourage other nuclear powers to limit the growth of their own arsenals. But can 1,000-warhead forces provide Russia and the United States a sufficient degree of second-strike survivability and, thus, stable and nonprovocative deterrence?

To answer this question, we establish four notional forces for each state and test them for their second-strike retaliatory capability. For Russia, the forces are (1) a balanced triad of land-based intercontinental ballistic missiles (ICBM), submarine-launched ballistic missiles (SLBM), and bomber-delivered weap-

ons; (2) a dyad of land- and sea-based missiles without bombers; (3) a dyad of land-based missiles and bombers without sea-based missiles; and (4) a force composed entirely of land-based missiles. For the United States, the alternative forces are (1) a balanced triad of land-based missiles, submarine-launched missiles, and bombers; (2) a dyad of sea-based ballistic missiles and bombers; (3) a dyad of land- and sea-based ballistic missiles; and (4) a force composed entirely of sea-based ballistic missiles. The use of alternative force structures for each state permits the investigation of “what if” possibilities outside the box of current planning parameters in Washington and Moscow. (The time frame for actually fielding any or all of these forces is roughly 2012–15, depending on the speed of negotiations and force modernization). An additional point of interest is whether each state could preserve credible deterrence despite “conventionalizing” the warheads in one or more of its previously nuclear-capable, long-range forces.

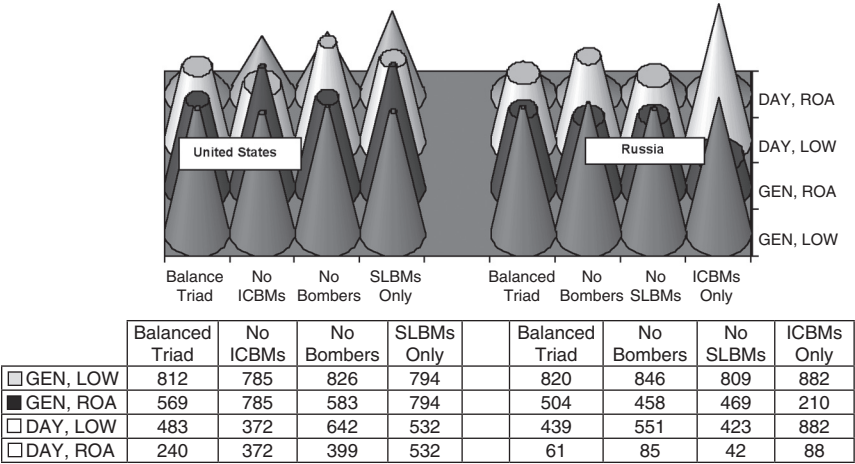
In figure 1, the initially deployed forces of Russia and the United States are depicted in summary form. These forces are notional and heuristic and not predictive of actual deployments, and they are projected for a post-SORT world of 2012–15 or so.



**Figure 1. Total strategic weapons, United States–Russia, 1,000 limit**

*Source:* The author gratefully acknowledges Dr. James Scouras for use of his AWSM@ model for making calculations and drawing graphs used in figures 1–8. Dr. Scouras is not responsible for any of the arguments or opinions in this study.

Figure 2 summarizes the numbers of surviving and retaliating warheads for each state under each of four operational conditions of retaliation: (1) generated alert and launch on warning (GEN-LOW), (2) generated alert and riding out the attack (GEN-ROA), (3) day-to-day alert and launch on warning (DAY-LOW), and (4) day-to-day alert and riding out the attack (DAY-ROA). In general, a retaliator would progressively lose strength in proceeding from condition 1 to condition 4, but not always. Much depends upon the mix of forces deployed and the operational protocols decided upon by political and military leaders.



**Figure 2. Arriving retaliatory weapons, United States–Russia, 1,000 limit**

Inspection of figure 2 reveals that both Russia and the United States can preserve stable deterrence at levels significantly below the Moscow Treaty (SORT) ceilings of 2,200–1,700 deployed warheads. Only in the case of Russian forces in the DAY-ROA condition does the number of either state’s survivable and retaliating warheads fall below several hundred, regardless of force structure. The model shows that both states would have more than sufficient capability for assured retaliation, inflicting “unacceptable” societal damage, and additional ordnance to provide for strikes against a number of other target sets, including the other side’s nuclear and conventional forces, command-

and-control centers, and economic assets supporting its military capability.

Doubtless, some Russian and American negotiators and their military advisors would be reluctant to downsize their deployed long-range weapons to this extent. Each has potential adversaries other than its American or Russian counterpart that may require inclusion in its nuclear targeting plans. Nevertheless, absent a post-Putin flop in its nuclear force modernization plans by Russia between now and 2012, the assured retaliation of each side's balanced triad of nuclear forces is not in doubt in the most plausible scenarios.

As a sidebar, the results summarized in figure 2 also show that each state could (hypothetically) consider conversion of at least one component of its nuclear triad for conventional long-range strike missions. The United States, in fact, plans to convert some tubes on SSBNs (fleet ballistic missile submarines) that were formerly assigned to nuclear-armed ballistic missiles for missiles armed with conventional charges. Russia objected vehemently to this idea of mixing conventional and nuclear weapons aboard one launch platform, arguing that the launch of a conventionally armed ballistic missile might be mistaken for a preemptive nuclear strike at or near Russian state territory (depending on the missile trajectory). One possible American response might be to "conventionalize" part or all of its strategic land-based ICBMs instead of its SLBMs. US land-based missiles are all deployed in fixed locations in silos and thereby invite preemptive attack during a crisis, compared to the relatively more survivable sea-based missiles and bombers.

In fact, conventionalizing part or all of the US strategic land-based missile force could be consistent with the Bush-professed "new triad" of long-range conventional and nuclear offenses, anti-missile defenses, and improved infrastructure for the conduct of military operations, including command-control-communications, reconnaissance, and network-centric warfare. From the standpoint of nuclear crisis stability, US land-based missiles, unless launched on warning, are the least survivable part of the current nuclear triad. Their dubious second-strike survivability increases crisis time pressures for prompt launch. On the other hand, if the nuclear warheads on American ICBMs were replaced with conventional munitions, they would provide prompt and usable long-range

striking power against a variety of targets, including the military assets of state and nonstate actors alike.

Given the capabilities of US naval and air-launched strategic nuclear weapons, conventionalization of the ICBM force would still leave considerable nuclear retaliatory capability. For example: in figure 2, the United States, with forces on generated alert and riding out the attack (the canonical situation for most analysis, although not necessarily the actual decision in any particular crisis) provides for 785 surviving and retaliating warheads with its “no ICBM” force. Could Russia do likewise? Russia’s nuclear modernization problems might preclude a decision to delete any entire arm of service from its ranks of nuclear-capable forces. But Russia might follow the American lead, at least in part. As a contribution to deterrence and crisis stability, Russia could maintain its mobile land-based strategic missiles as nuclear capable but denuclearize its silo-based ICBMs. Russia’s Topol-M, the mainstay of its future long-range missile force, was designed from the beginning for both mobile and silo basing.<sup>8</sup> Of course, both Russian and US forbearance in this regard would require verification.

Russia might not want to make this decision—to rely on its mobile ICBMs only—if its military planners feared that its mobile ICBMs were as first-strike vulnerable as both American and Russian silo-based missiles were thought to be. The second-strike survivability of mobile land-based missiles was a matter of debate throughout the Cold War and remains so. Although the silo-based version of the Topol-M has already been deployed in significant numbers, comparatively few of the mobile version have been deployed and road tested (as of early 2008). US reconnaissance and surveillance, technologically advanced compared to its Cold War capabilities, might defy any effort to hide the peacetime locations of mobile missiles or to activate their transporter-erector-launchers (TEL) for missile strikes.

Conventionalization of part or all of the US or Russian long-range missile and bomber forces would not be a “deal breaker” for any reconstructed SORT-START regime. Either state can fulfill the requirements of assured retaliation with its current and planned forces. The more nuanced question is whether dangerous degrees of instability remain with respect to the gap between the performance of the two states’ forces under condi-



tions of high compared to low alert and under conditions of prompt compared to delayed launch.

Figure 3 graphically depicts the generation stability of the US and Russian forces. Each force structure is represented by two vertical bars. The left bar shows the number of surviving and retaliating weapons on day-to-day alert as a percentage of the number of surviving and retaliating weapons on generated alert, under conditions of LOW. The right bar for each force structure shows the number of surviving and retaliating warheads on day-to-day alert as a percentage of the number of surviving and retaliating warheads on generated alert when riding out the attack and then retaliating.

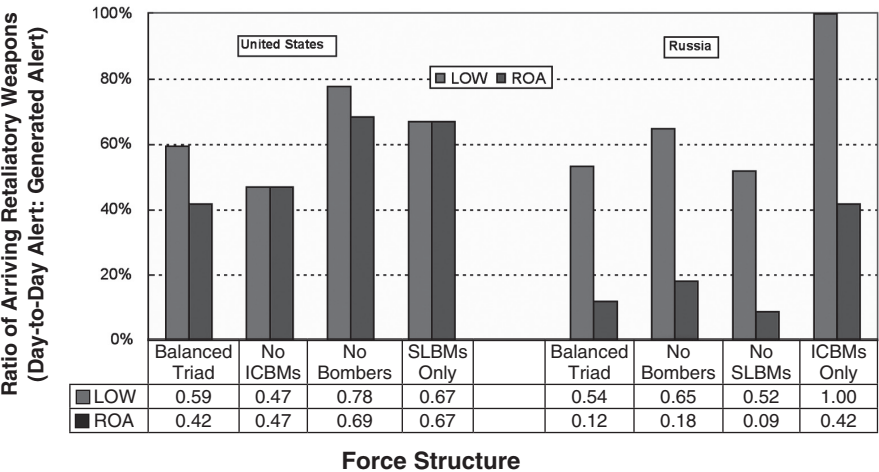
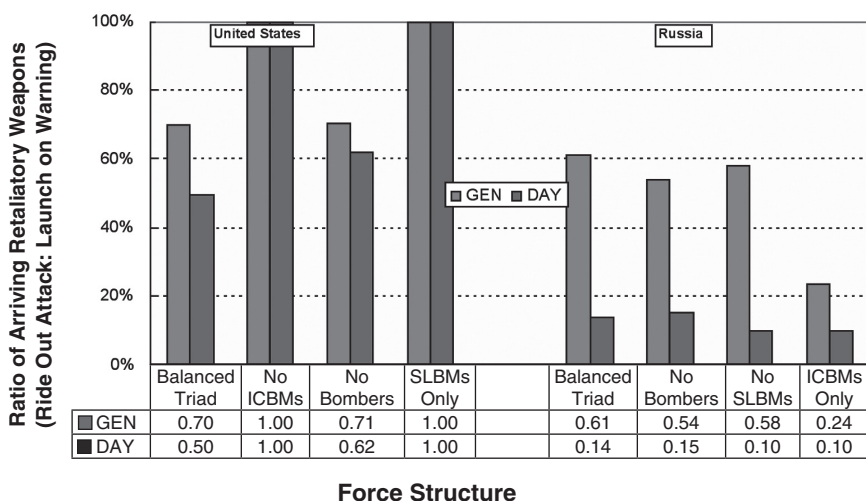


Figure 3. Generation stability, United States–Russia, 1,000 Limit

Figure 4 provides information similar to figure 3 for Russian and US LOW stability. Each state’s forces are represented by two bars. The left bar shows the numbers of surviving and retaliating warheads when ROA as a percentage of the number when weapons are LOW under conditions of generated alert. The right bar provides the same information about the percentage of ROA to LOW surviving and retaliating warheads under conditions of day-to-day alert.





**Figure 4. Launch-on-warning stability, United States–Russia, 1,000 Limit**

The findings summarized in figures 3 and 4 suggest an important warning about nuclear arms limitation. Reducing the size of Russian, American, or other nuclear forces does not necessarily reduce the degree of nuclear danger. Nuclear danger inheres not only in the numbers of weapons that are deployed or otherwise maintained in arsenals, but also in the expectations and operational proclivities for the use of these weapons for deterrence (preferably) or in response to attack.

Examples in the US and Russian cases are provided in figures 3 and 4. In figure 3, both the American and Russian “balanced-triad” forces show significant differences in generation stability when riding out the attack compared to launching forces on warning. This situation creates a predisposition for prompt launch under conditions of uncertainty and perceived threat. In figure 4, both Russian and US balanced-triad forces show significant differences in LOW stability under conditions of generated alert compared to normal peacetime alert. Thus, each state has some incentive to accelerate its alerting of nuclear forces during a crisis. The observation of each state’s alerts by the other’s intelligence collectors can create a reciprocal process of mistrust and a conflict spiral that results in accidental inadvertent war.

Notwithstanding these caveats about the need to improve US and Russian nuclear crisis stability, the preceding discussion provides support for the pursuit of a post-SORT regime or a new START agreement that reduces the numbers of operationally deployed weapons below the currently agreed SORT maximum. A force of 1,000 deployed weapons on intercontinental launchers provides for two-way deterrence and reassurance under any reasonable set of assumptions. What might be unreasonable? First, Russia might fail to modernize its long-range nuclear forces so drastically that the United States would acquire a not-incredible first-strike capability. We use the term *not incredible* instead of *credible* because *not incredible* implies a statistical, not a substantive, judgment. A statistical temptation to first strike or coercion based on first-strike capability assumptions is something no prudent US leader would want to act on. An American nuclear first strike against Russia is a moral and political nonstarter, especially in an era of US global primacy in conventional forces.

Second, the United States might deploy missile defenses that, regardless of actual capability, could frighten Russia into an even greater dependency on high alert and prompt launch for the survivability of its nuclear deterrent. The political character of missile defenses interacts with assumptions about their technical performance. Three abstract possibilities present themselves. Missile defenses that obviously do not work, or do not work against any attack larger than a few warheads, pose no problem for Russia. In the opposite case, US missile defenses that would work perfectly or nearly so would nullify Russia's deterrence, insofar as that deterrence was based on ballistic missiles. Russia would still have air-delivered and sea-based cruise missiles, but perfect or near-perfect American missile defenses would threaten to push Russia into the ranks of second-tier military powers.

A third possibility is that US missile defenses improve technically but not so much as to preclude Russia's second-strike capability. American missile defenses might then not *immediately* threaten Russia, but Russia might fear the *eventual* improvement of US missile defenses and the negation of its nuclear deterrent. Russian fears could provoke a number of possible responses: (1) increased offensive force modernization, including countermeasures against

US missile defenses; (2) Russia's own missile defense deployments growing out of its historical and current experience in high-altitude air defenses and limited ballistic-missile-defense deployments during the Cold War; (3) increased Russian political or military pressure against NATO Europe to create divisions among the member states of an expanded NATO; or (4) a Russian-Chinese axis of strategic cooperation and coordination already set in motion during the George W. Bush administration but given additional importance by Russia's fears and China's rising ambitions in the Asian Pacific.

### **From Vertical to Horizontal—Extending Success**

Earlier we asserted that Russian-American cooperation on nuclear arms reduction was causally linked to further progress on nuclear nonproliferation. The connection between bilateral US-Russian "vertical" arms control and multilateral "horizontal" arms limitation is a psychological one, but not only that. It is psychological in the sense that downsizing of US and Russian forces establishes a benchmark or precedent that others may feel more justified in following. But more than psychology is at work here. Russian-American nuclear arms reductions can only take place within a political setting favorable to the accomplishment of their respective strategic ambitions. Politics is the driver of strategy. Therefore, favorable outcomes in nuclear arms control are not the causes of improved Russian-American relations (compared to the Putin years) but the symptoms; that is, the effects.

Improved Russian-American political relations are certainly possible after 2008. Two new presidents have been elected to replace George W. Bush and Vladimir Putin. Although most Russians seem to expect continuity in national security policy from Putin to Medvedev, the change in US presidential politics may be more profound. The Democratic administration in Washington beginning in 2009 may withdraw most US combat forces from Iraq within a few years, assuaging at least one sore point in US-Russian relations under Putin. More listening to our traditional allies in Europe should provide more opportunities for reducing the room temperature of topics such as NATO enlargement, missile defenses in Eastern Europe, and Russia's complaints about American unilateralism and hegemony. Of course, much of Pu-

tin's bluster in 2007 was dovetailed for Russia's domestic political audience, but it also reflected frustration when Russia felt its interests were being insufficiently taken into account (Kosovo) or its former security space was being pushed back (possible accession of Ukraine and Georgia into NATO).

A favorable political climate between the United States and Russia would also open the door to enlisting other nuclear weapons states into a "grand bargain" that could establish a tiered system of constrained nuclear proliferation. Let us imagine one such system, consistent with a Russian-American post-SORT (or new START) agreement, with each state limited to a maximum of 1,000 operationally deployed nuclear weapons (as above). The Russian-American agreement could be the centrifugal reference point around which other nuclear powers agreed to group. In the second tier of established powers, Britain, China, and France would each agree to limit their numbers of operationally deployed, long-range nuclear warheads to a maximum of 500. In a third tier, India, Israel, and Pakistan would each agree to a ceiling of 300. In this constrained or controlled proliferation model, it is assumed that Iran is somehow precluded from deploying nuclear weapons and that the North Korean nascent program has been effectively rolled back.<sup>9</sup>

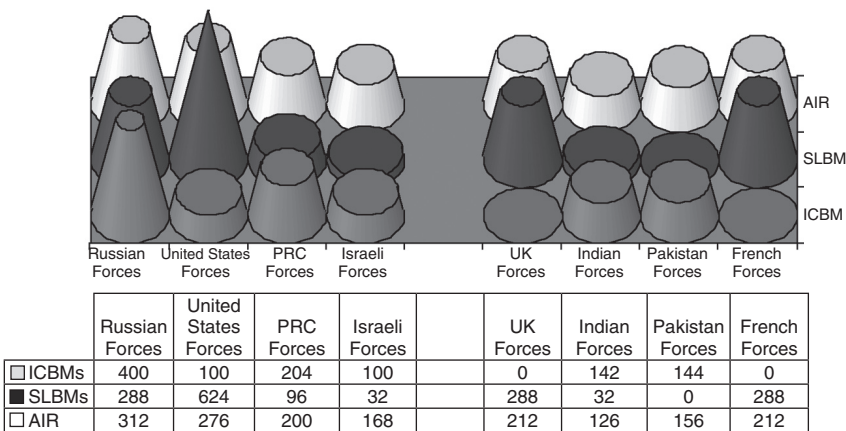
The reasoning behind the three-tiered metric described above is as follows.<sup>10</sup> Russia and the United States would have no incentive to reduce their forces below SORT levels if other powers took advantage of this by growing their own arsenals. Therefore, restraint on the part of the other six declared or acknowledged nuclear weapons states would be required for the Russians and Americans to follow through with their bilateral agreements. The postulated numbers are notional, as are the hypothetical forces projected for each state in the model below. The exact composition of each state's forces for the period 2012–15 is unknown, and prognostication at this stage would be fatally error-prone.

One immediate difficulty presents itself, and that is the definition of *long range* and *strategic* for purposes of establishing equal limits among very different states and arsenals. India, Pakistan, and China, for example, are sufficiently close to one another to inflict considerable nuclear damage without requiring missiles or airborne launchers of international range. For states that can inflict "strategic" damage with shorter-than-intercontinental

launchers, some negotiations among the powers would have to arrive at a metric for transforming “inequality” into “equality.”

For example, the parties might agree to define as strategic in *effect* any nuclear-assigned launcher capable of delivering a weapon to the cities of another nuclear power. Or the nuclear weapons states might agree that any nuclear-assigned ballistic missiles with maximum ranges at or above 1,000 km were by definition strategic in impact. New negotiating ground and verification standards might have to be broken to nail down the agreement. One possibility is joint inspections—the Chinese and the Americans could each inspect and verify part, but not all, of the Pakistani arsenal; the Russians and Americans could share the responsibility for India (with the International Atomic Energy Agency backstopping both).

Let us suppose that the procedures have been negotiated and navigated, and our controlled proliferation regime has been brought to life. Figure 5 summarizes the numbers of *strategic* weapons available to each state by category, using the traditional category delimiters: ICBMs, SLBMs, and air-delivered weapons. In this context, we understand that “ICBM” implies land-based ballistic missiles as a category, and “SLBM” means sea-based ballistic missiles as a category. In fact, in this category, states might agree to mix ballistic and cruise missiles of comparable ranges, if they could get around the problems of verification.



**Figure 5. Total strategic weapons, controlled proliferation model**

The next step is to subject each of these deployed nuclear forces to a first strike and to calculate their respective numbers of surviving and retaliating warheads. Of course, in the “real world” of international politics, all of these states would not be involved in any war at the same time! The exercise is heuristic for comparative “what if” purposes and not a projected Armageddon. But it is a necessary calculation to visualize the implications of unequal prewar deployments for postwar options. The outcomes of these nuclear force exchanges are compared in figure 6.

The numbers in figure 6 speak emphatically about the most essential truth of the nuclear age. It takes only a small number of surviving and retaliating warheads to inflict considerable, and for most people, unacceptable damage. Deterrence can be secure in this three-tiered model of controlled nuclear proliferation *if* (a decisive “if”) the political setting for the international system is permissive of stability. That means nuclear-capable state actors whose political objectives favor the status quo are neither outnumbered nor outgunned by nuclear weapons states with revisionist aims. One other potential problem is the perennial curse of nuclear-deterrence model-builders: the actor who is “beyond deterrence” or irrational by the standards of the established and status quo weapons states favoring controlled proliferation.

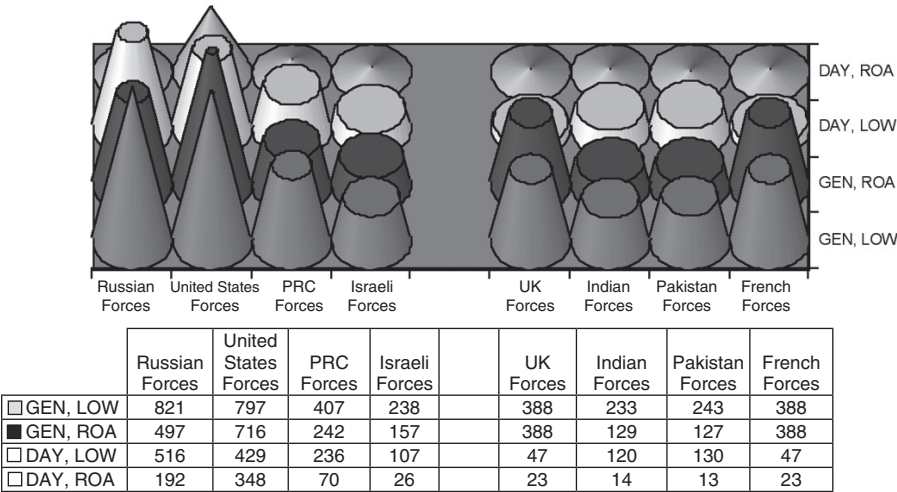


Figure 6. Arriving retaliatory weapons, controlled proliferation model

A great deal of ink has been spilled over the issue of what is “rational” or “sensible” decision making in security and other matters.<sup>11</sup> Rationalities are culturally and socially determined; they are not strictly mathematical constructs. States and their leaders will fight for all kinds of objectives, and they measure costs and benefits differently. Neither a system of controlled proliferation nor any other man-made construct can guarantee against war brought about by the perennial motives of which Thucydides warned: fear, honor, and interest. As suicide bombers of the present era have demonstrated, some attackers are “beyond deterrence” as the term deterrence is commonly understood.

Most governments, however, will be interested in their own survival and that of their societies. Governments have territory and other assets to protect. Those assets and the very lives of government leaders can be held at risk. Deterrence may not always work, but it can work “well enough” to push decision making into the risk-averse, as opposed to the risk-acceptant, basket. That may be as much as any system of influence, based on the allocation of weapons and tacit or explicit threats, can be expected to accomplish. Deterrence is neither a substitute for effective diplomacy nor a cure for incompetent policy making.

On the other hand, deterrence can be weaker or stronger to the extent that it is accident-prone or more, instead of less, inviting of high alerts and prompt launch decisions during a crisis. So in figure 7, the generation stability of each of the eight states’ forces included in the controlled proliferation model is depicted. The interpretive scheme follows that of the earlier figure 3 for the bilateral US-Russian case. In figure 7 each state has one force, and each force is represented by two bars. The left bar shows the percentage of day-to-day compared to generated alert weapons surviving and retaliating under conditions of LOW. The right bar for each state shows the percentage of day-to-day compared to generated alert weapons surviving and retaliating when riding out the attack.

In figure 8, the data for LOW stability for the controlled proliferation model are summarized. As in figure 4 for the US-Russia case, the interpretation follows thus. Each state’s force is represented by two vertical bars. The left bar shows the number of weapons retaliating after riding out the attack as a percentage



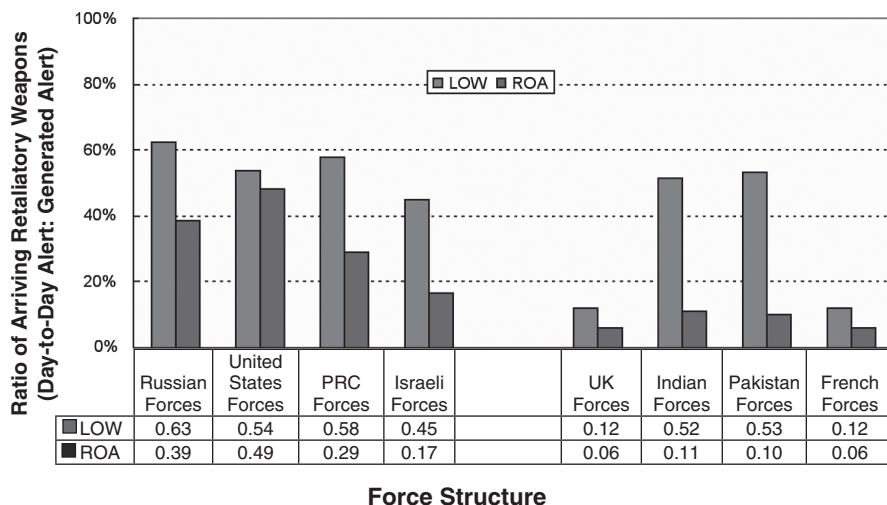


Figure 7. Generation stability, controlled proliferation model

of the number of weapons retaliating after LOW under conditions of generated alert. The right bar for each state shows the number of weapons retaliating in ROA as a percentage of the number retaliating in LOW for the condition of day-to-day alert.

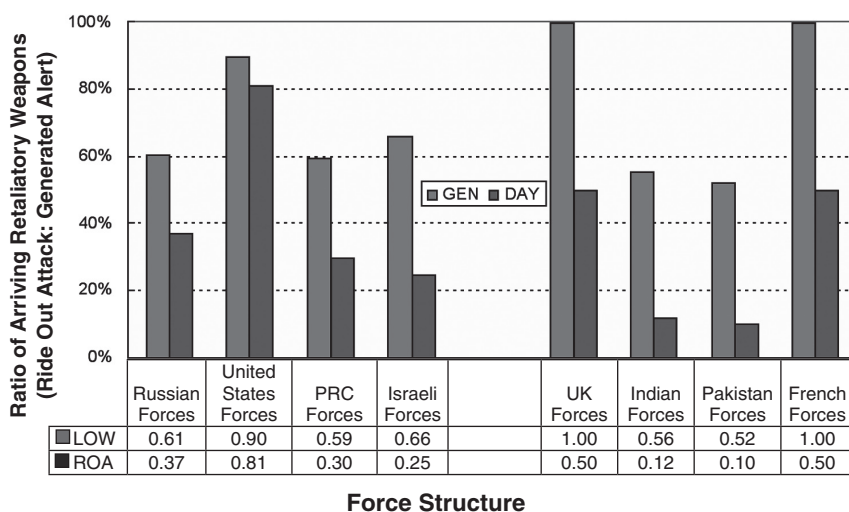


Figure 8. Launch-on-warning stability, controlled proliferation model



The information summarized in figures 7 and 8 argues against complacency. A system of controlled nuclear weapons spread has unavoidable built-in inequities. Depending upon where and how negotiators “freeze” the frame, some states will have larger and more diverse prewar arsenals. If war comes, this prewar inequality will obviously manifest itself. However, there is no “equal” scheme for controlling nuclear weapons other than a total global nuclear abolition or disarmament. Therefore, any steps between here and there will involve inequalities, but they are not necessarily inequities that the powers cannot live with. Smaller powers need not feel helpless.

Nuclear weapons are preeminently weapons for nonuse—for deterrence of nuclear attack or blackmail and for support of other policy objectives by means short of war. A few nuclear weapons can support a great deal of deterrence or coercive diplomacy. Consider the United States’ and others’ experience in negotiating with North Korea, assumed to be temporarily in possession of nuclear weapons, although intelligence is uncertain as to exactly how many and how powerful they are. North Korea in 2007 was part of six-party talks involving the United States, South Korea, Japan, Russia, and China. The great powers in Asia were grouped at Pyongyang’s doorstep because of the potential that North Korea’s nascent nuclear capability held for destabilization of the entire nonproliferation regime in Asia, or beyond. Nuclear weapons are even influential in support of a state’s policies before they are acquired, as Iran has demonstrated. Its on-again, off-again negotiations with the United Nations and with a SWAT team of European negotiators is empowered by Tehran’s romancing of a nuclear fuel cycle that eventually might, or might not, be weaponized.

Figures 7 and 8 show in this regard that size alone tells us very little about nuclear danger. How stable or precarious these forces are also depends upon their mix of weapons systems, their command-control procedures, and the nature of civil-military relations in each state. In addition, the comparison between figures 3 and 4 for a two-state nuclear competition and figures 7 and 8 for a multistate situation reveals at least one additional insight. Optimism that “more is better,” with respect to the spread of nuclear weapons among currently nonnuclear states, demands heroic faith in deterrence.<sup>12</sup> An eight-sided competi-

tion involves significantly more uncertainty and includes many more decision points than does a two-sided arms race. There are more opportunities for Clausewitz's "friction" and for "Murphy's law" to thrust against deterrence stability. One does not need Hollywood to write plausible, if contestable, scenarios for the first detonation of a nuclear weapon in anger since Nagasaki.<sup>13</sup>

## **Conclusion**

Politics determines the larger context within which strategy, and therefore nuclear arms control, must operate. The imperative for nuclear arms control, and especially for the effective control of nuclear weapons spread, is as incontestable as it is difficult to accomplish. Nuclear nonproliferation will not happen simply because it is the right thing to do. Leadership is required, and the United States and Russia must assume this role, in two aspects—reducing their own nuclear weapons arsenals, especially their long-range strategic nuclear forces, and leading the parade of existing nuclear weapons states to contain the nuclear-aspiring and the nuclear-sniffing states interested in or capable of joining the nuclear club.

The present analysis shows that both tasks, however politically arduous, are technically feasible and militarily sustainable. The United States and Russia can maintain a stable bilateral nuclear deterrent relationship within a deployment constraint of 1,000 warheads on intercontinental launchers. With this as the "anchor" or pivotal construct, a controlled proliferation regime could be established among the existing declared and widely acknowledged nuclear weapons states. But the "Allison line" must be held for this to work—no weapons for Iran and transparent dismantlement of North Korea's nuclear weapons and infrastructure.<sup>14</sup> The objection that this line discriminates against some states in favor of others is valid; strategy is not about fairness, but about survival.

## **Notes**

1. For a concise listing and discussion of pertinent issues, see Stephen J. Blank, *Towards a New Russia Policy* (Carlisle, PA: Strategic Studies Institute, US Army War College, February 2008), especially pages 5–8.

2. The need for Russian and American leadership in nuclear arms control and nonproliferation is well argued in Joseph Cirincione, *Bomb Scare: The History and Future of Nuclear Weapons* (New York: Columbia University Press, 2007), passim. See also Alexei Arbatov and Rose Gottemoeller, "New Presidents, New Agreements? Advancing US-Russian Strategic Arms Control," *Arms Control Today* 38, no. 6 (July/August 2008), [http://www.armscontrol.org/act/2008\\_07-08/CoverStory.asp](http://www.armscontrol.org/act/2008_07-08/CoverStory.asp).

3. Clarification of the concepts of prevention and preemption and evaluation of pertinent American experience is provided in Karl P. Mueller et al., *Striking First: Preemptive and Preventive Attack in US National Security Policy* (Santa Monica, CA: RAND, 2006).

4. This list is adapted for my purposes from Colin S. Gray, *Fighting Talk: Forty Maxims on War, Peace, and Strategy* (Westport, CT: Praeger Security International, 2007), 3–6. He is not responsible for its use here.

5. David M. Glantz, "The Soviet-German War on the Eastern Front: Myths and Realities" (lecture, Penn State Brandywine, 25 March 2008), author's notes.

6. Raymond L. Garthoff, *Deterrence and the Revolution in Soviet Military Doctrine* (Washington, DC: Brookings Institution, 1990), 6–28 passim. See also Garthoff, *The Great Transition: American-Soviet Relations and the End of the Cold War* (Washington, DC: Brookings Institution, 1994); and Andrei A. Kokoshin, *Soviet Strategic Thought, 1917–91* (Cambridge, MA: MIT Press, 1998).

7. The author gratefully acknowledges Dr. James Scouras for use of his AWSM@ model for making calculations and drawing graphs. Dr. Scouras is not responsible for any arguments or opinions in this study.

8. Nikolai Sokov, *Russian Strategic Modernization: Past and Future* (Lanham, MD: Rowman and Littlefield, 2000), 128–29.

9. David Albright and Jacqueline Shire, "Slowly, but Surely, Pyongyang is Moving," *Washington Post*, 24 January 2008, A19, offers a hopeful assessment. On Iran, see, *National Intelligence Estimate, Iran: Nuclear Intentions and Capabilities* (Washington, DC: National Intelligence Council, November 2007).

10. For context with respect to future nuclear weapons capabilities and intentions, in addition to sources already cited, see Susan L. Craig, *Chinese Perceptions of Traditional and Nontraditional Security Threats* (Carlisle, PA: US Army War College, Strategic Studies Institute [SSI], March 2007), especially 36–37; Carolyn W. Pumphrey, ed., *The Rise of China in Asia: Security Implications* (Carlisle: SSI, January 2002); Mark A. Stokes, *China's Strategic Modernization: Implications for the United States* (Carlisle: SSI, September 1999); Young Whan Kihl and Hong Nack Kim, eds., *North Korea: The Politics of Regime Survival* (Armonk, NY: M. E. Sharpe, 2006); Andrew Scobell and John M. Sanford, *North Korea's Military Threat: Pyongyang's Conventional Forces, Weapons of Mass Destruction, and Ballistic Missiles* (Carlisle: SSI, April 2007), especially 71–100; D. R. SarDesai and Raju G. C. Thomas, eds., *Nuclear India in the Twenty-First Century* (New York: Palgrave-Macmillan, 2002), especially chap. 5; Henry D. Sokolski, ed., *Pakistan's Nuclear Future: Worries beyond War* (Carlisle: SSI, January 2008); Henry Sokolski and Patrick Clawson, eds., *Getting Ready for a Nuclear-Ready Iran* (Carlisle: SSI, October 2005), especially chaps. 7–8; Henry Sokolski, ed., *Taming the Next Set of Strategic Weapons Threats*

(Carlisle: Nonproliferation Policy Education Center and SSI, June 2006), especially chaps. 1–3; and Henry D. Sokolski, ed., *Prevailing in a Well-Armed World: Devising Competitive Strategies against Weapons Proliferation* (Carlisle: Nonproliferation Policy Education Center and SSI, March 2000). Projections for Russia are author's estimates; see also, Pavel Podvig, *The Russian Nuclear Arsenal* (Palo Alto, CA: Center for International Security and Cooperation, Stanford University, 2006); and Irina Isakova, *Russian Defense Reform: Current Trends* (Carlisle: SSI, November 2006), 34–38.

11. Both rational and sensible treatment of these matters appears in Patrick M. Morgan, *Deterrence Now* (Cambridge: Cambridge University Press, 2003); and Keith B. Payne, *Deterrence in the Second Nuclear Age* (Lexington: University Press of Kentucky, 1996).

12. Two sides of this issue are argued in Scott D. Sagan and Kenneth N. Waltz, *The Spread of Nuclear Weapons: A Debate* (New York: W. W. Norton, 1995). This study focuses on proliferation and deterrence as related to state actors. For the relationship between terrorism and nuclear proliferation, see Graham Allison, *Nuclear Terrorism: The Ultimate Preventable Catastrophe* (New York: Henry Holt and Co.–Times Books, 2004).

13. George H. Quester, *Nuclear First Strike: Consequences of a Broken Taboo* (Baltimore, MD: Johns Hopkins University Press, 2006), offers pertinent scenarios for the first use of nuclear weapons since 1945.

14. Allison, *Nuclear Terrorism*, 156–71. The “Allison line” includes no loose nuclear weapons, no new nascent nukes, and no new nuclear weapons states.



Research Feedback

Air University is working hard to keep its research focused on interests important to the Air Force and to the nation. After you have read the research paper, please give us your frank opinion on the contents. All comments, large and small, complimentary or caustic, will be appreciated.

AFRI/CL  
Director, Air Force Research Institute  
155 N. Twining St., Bldg. 693  
Maxwell AFB, AL 36112-6026

**Title of Paper:** Taking the Lead: Russia, the United States, and Nuclear Nonproliferation after Bush

**Author:** Stephen J. Cimbala

Please use the scale below to answer these important questions:				
1. Fail	2. Poor	3. Fair	4. Good	5. Excellent
1. Is the subject matter relevant to the Air Force?		1 2 3 4 5		
2. How would you rate the readability of this paper?		1 2 3 4 5		
3. How useful is this research to you and your organization?		1 2 3 4 5		

Comments:

Thank you for your assistance.

FOLD HERE

Place  
Stamp  
Here

AFRI/CL  
Director, Air Force Research Institute  
155 N. Twining St., Bldg 693  
Maxwell AFB AL 36112-6026

**Commander, Air University**

Lt Gen Allen G. Peck

**Commander, Curtis E. LeMay Center for  
Doctrine Development and Education**

Maj Gen Stephen J. Miller

**Director, Air Force Research Institute**

Gen John A. Shaud, USAF, Retired